

MATH 102 Dual Credit College Algebra
Rapid City Area Schools and Black Hills State University
Syllabus

Instructor: Kirk A. Guymon

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Classroom: Stevens High School – Room 228

Last Add/Drop Date: 9/6/2015

Office Hours: M-F 7:30-8:00 a.m. & 3:10-3:30

Last “Withdraw w/ W”: 12/4/2015

Semester/Year/Meeting Time: August 24, 2015 – January 14, 2016 10:05-10:53 M-F and
January 19, 2016 – May 20, 2016 9:08-10:00 M-F

Course Description: This course includes a study of equations and inequalities; polynomial functions and graphs; exponents; radicals; the binomial theorem; zeros of polynomials; systems of equations; exponential, logarithmic, and inverse functions, applications and graphs. Other topics will be selected from sequences, series, and complex numbers. **(3 college credits)**

Requirements to Enroll for Dual Credit:

Juniors: In the top 33% of their class, OR an ACT score of 24 or better; OR GPA of 3.5 or better

Senior: In the top 50% of their class; OR ACT score of 21 or better; OR GPA of 3.25 or better

All students must also meet **one** of these requirements:

- Mathematics ACT subscore of 20 or higher
- ACCUPLACER score Elementary Algebra 76-120 **AND** ACCUPLACER score College Algebra 0-50+

Materials:

Textbook - The Consortium for Foundation Mathematics. *Applied Mathematics*. Pearson Custom Publishing. ISBN-10: 0-558-20315-9

Online Textbook – Stitz-Zeigler *Open Source Chapter 0 Prerequisites*. <http://www.stitz-zeager.com/>

Online Textbook – Stitz- Zeigler *Open Source College Algebra 3rd Edition*. <http://www.stitz-zeager.com/>

Grading:

Grades will be assigned based on performances in the following activities with the given weights:

- | | |
|------------|---|
| 10% | Participation in class |
| 10% | Assignments/Homework |
| 10% | Quizzes |
| 50% | Unit exams (three exams averaged together based on total points) |
| 20% | Final exam |

Exams

There will be three written unit exams, and a written final exam. The unit and final exams will each have questions similar to those assigned in the homework sets and quizzes over material since the previous exam. The three unit exams will be proctored closed book exams. The course will end with a proctored (non-comprehensive) closed book final exam, which will focus on material from Unit 4. A tentative outline of dates for Outcomes and Exams is given at the end of this syllabus.

Your BHSU final course grade will be determined using this grading scale:

A [90% , 100%]
B [80% , 90%)
C [70% , 80%)
D [60% , 70%)
F [0% , 60%)

Your final grade will appear on a BHSU transcript and will become part of your permanent transcript within the SD university system.

All BHSU and RCAS High School Handbook Policies Apply.

<http://bhsu.edu/StudentLife/StudentHandbook/tabid/2350/Default.aspx>

<https://public.rcas.org/Pages/HandbooksRegistration.aspx>

Academic Dishonesty: Cheating and other forms of academic dishonesty run contrary to the purpose of higher education and will not be tolerated in this course. Academic dishonesty includes (but is not limited to) plagiarism, copying answers or work done by another student (either on an exam or on out-of-class assignments), allowing another student to copy from you, and using unauthorized materials during an exam. Academic dishonesty is a serious offense and could result in failure on an assignment or course. To the extent possible, all incidents will be resolved in discussions between the student and faculty member. As necessary, the chair and then the dean may become involved to resolve the issue. If academic dishonesty is established, a report describing the incident and its resolution will be filed in the offices of the dean and provost. In cases where a satisfactory outcome is not achieved through this process, students may appeal to the University's Academic Appeals Committee. Formal procedures for filing a complaint for academic misconduct are in the Student Conduct Code in the Student Handbook. Cheating and plagiarism are defined in Section 2, Part B, 1. Disciplinary sanctions are outlined in Section 3, Judicial Policies.

ADA Statement: "Reasonable accommodations, as arranged through the Disabilities Services Coordinator, will be provided students with documented disabilities. Contact the BHSU Disabilities Services Coordinator, Mike McNeil, at 605-642-6099 (Woodburn 134), fax number 605-642-6095, or via email at Mike.Mcneil@bhsu.edu for more information. Additional information can also be found at: <http://www.bhsu.edu/StudentLife/Learning/DisabilityServices/tabid/162/Default.aspx> "

Freedom in Learning: "Under Board of Regents and University policy student academic performance may be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. Students who believe that an academic evaluation reflects prejudiced or capricious consideration of student opinions or conduct unrelated to academic standards should contact the chair of the department in which the course is being taught to initiate a review of the evaluation."

Course Goals:

This course satisfies the following Board of Regents System General Education requirement.

Goal #5: Students will understand and apply fundamental mathematical processes and reasoning.

Student Learning Outcomes: As a result of taking the prerequisite course(s) or by being placed into this course, students will have:

1. Used mathematical symbols and mathematical structure to model and solve real world problems.
2. Demonstrated appropriate communication skills related to mathematical terms and concepts.
3. Demonstrated the correct use of quantifiable measurements of real world situations.

College Algebra Student Learning Outcomes

The corresponding BHSU outcome and RCAS textbook sections are listed after each

Unit 1:

1. Students will be able to use exponent rules, and simplify radical expressions. (BHSU MATH 102 Unit 1 Outcome 1; Stitz-Zeager Pre-calculus Prerequisites a.k.a. Chapter 0 Chapter 0.2; Stitz-Zeager College Algebra chapter 5.3)
2. Students will be able to solve radical equations with one or two radical terms. (BHSU MATH 102 Unit 1 Outcome 6; Stitz-Zeager College Algebra chapter 5.3)
3. Students will be able to find the slope of a line, graph linear equations, find the intercepts, as well as solve linear inequalities. (BHSU MATH 102 Unit 1 Outcome 2; Applied Mathematics chapter 2 and chapter 3)
4. Students will be able to find an equation of a parallel or perpendicular line as well as interpret the meaning of the slope of a line. (BHSU MATH 102 Unit 1 Outcome 3; Applied Mathematics chapter 2; Stitz-Zeager College Algebra chapter 2.1)
5. Students will learn the Distance and Midpoint formulas and will be able to graph and write equations of a circle. (BHSU MATH 102 Unit 1 Outcome 8; Stitz-Zeager College Algebra chapter 1.1 and chapter 7.2)
6. Students will be able to solve equations and inequalities with absolute-value expressions. (BHSU MATH 102 Unit 2 Outcome 7; Stitz-Zeager College Algebra chapter 2.4)

Unit 2:

1. Students will be able to solve applied problems using formulas and functions as well as models (BHSU MATH 102 Unit 1 Outcome 9; Applied Mathematics entire textbook).
2. Students will be able to solve a system of two linear equations. (BHSU MATH 102 Unit 3 Outcome 8; Applied Mathematics chapter 3)
3. Students will be able to solve linear inequalities. (Applied Mathematics 3.4)
4. Students will be able to solve quadratic equations. (BHSU MATH 102 Unit 1; Outcome 5; Applied Mathematics Chapter 4)
5. Students will be able to find the vertex, the minimum or maximum value, the intercepts, and then graph a given quadratic function and to solve quadratic inequalities. (BHSU MATH 102 Unit 1 Outcome 7; Applied Mathematics 4.3)
6. Students will be able to graph the identity, squaring, cubing, square root, cube root, semicircle and absolute value functions as well as find if the graph is increasing, decreasing, or constant. (BHSU MATH 102 Unit 2 Outcome 2; Applied Mathematics chapter 2; Stitz-Zeager College Algebra chapter 1.6; chapter 7)
7. Students will be able to graph linear, quadratic, absolute value, rational, and radical graphs as well as find if the graph is increasing, decreasing, or constant. (Applied Mathematics Chapters 3-Chapter 4)

Unit 3:

1. Students will be able to solve for inverse functions (Find an inverse, and use composite to verify that two equations are inverses). (BHSU MATH 102 Unit 3 Outcome 3; Stitz-Zeager College Algebra chapter 5.2)
2. Students will be able to solve operations with functions and compositions of functions. (BHSU MATH 102 Unit 2 Outcome 4; Stitz-Zeager College Algebra chapter 5.1)
3. Students will be able to use the basic properties of exponential and logarithmic functions. (BHSU MATH 102 Unit 3 Outcome 4; Applied Mathematics Chapter 5)

4. Students will know the properties of logarithms and be able to graph exponential and logarithmic functions. (BHSU MATH 102 Unit 3 Outcome 5; Applied Mathematics Chapter 5)
5. Students will be able to solve exponential and logarithmic equations using the rules of logarithms and exponents. (BHSU MATH 102 Unit 3 Outcome 6; Applied Mathematics 5.13, 5.15)
6. Students will be able to solve application problems of exponential and logarithmic functions using the rules of logarithms and exponents. (BHSU MATH 102 Unit 3 Outcome 7; Applied Mathematics Unit 5)
7. Students will be able to identify functions as well as finding the domain and range of a particular relation. (BHSU MATH 102 Unit 2 Outcome 1 Stitz-Zeager College Algebra chapter 5 and chapter 6)
8. Students will be able to transform graphs. (BHSU MATH 102; Unit 2 Outcome 3 Stitz-Zeager College Algebra chapter 1.7)

Unit 4:

1. Students will be able to add, subtract, multiply and divide polynomials and complex numbers. (BHSU MATH 102 Unit 1 Outcome 4; Stitz-Zeager College Algebra chapter 3.4)
2. Students will be able to find the domain and range of polynomials. (BHSU MATH 102 Unit 2 Outcome 1; Stitz-Zeager College Algebra chapter 5.1)
3. Students will be able to graph higher order polynomial functions as well as find if the graph is increasing, decreasing, or constant. (Stitz-Zeager College Algebra chapter 3.1)
4. Students will be able to find the zeros of polynomials using the remainder theorem, synthetic division, and the factor theorem. (BHSU MATH 102 Unit 2 Outcome 5; Stitz-Zeager College Algebra chapter 3.2)
5. Students will be able to find the zeros of polynomials using the rational zero theorem, the n-root theorem, and the conjugate pairs theorem. (BHSU MATH 102 Unit 2 Outcome 6 Stitz-Zeager College Algebra chapter 3.2)
6. Students will be able to identify vertical and horizontal asymptotes and graph rational functions. (BHSU MATH 102 Unit 3 Outcome 2; Applied Mathematics 4.10; Stitz-Zeager College Algebra chapter 4.1-4.3)
7. Students will be able to add, subtract, multiply, divide and simplify rational expressions and solve rational equations. (BHSU MATH 102 Unit 3 Outcome 1 Stitz-Zeager College Algebra chapter 4.1-4.3)

Semester 1:

Tentative Outline of Outcomes/Exams:

Unit 1:

Week of 8/24/2015: Outcomes 1
 Week of 8/31/2015: Outcomes 2 & 3
 Week of 9/7/2015: Outcomes 4 & 5
 Week of 9/14/2015: Outcomes 6 & Exam

Unit 2:

Week of 9/21/2015: Outcomes 1 & 2
 Week of 9/28/2015: Outcomes 3 & 4
 Week of 10/5/2015: Outcomes 5 & 6
 Week of 10/12/2015: Outcome 7
 Week of 10/19/2015: Exam

Unit 3:

Week of 10/26/2015: Outcomes 1 & 2
 Week of 11/2/2015: Outcomes 3 & 4
 Week of 11/9/2015: Outcomes 5 & 6
 Week of 11/16/2015: Outcome 7 & 8
 Week of 11/23/2015: Exam

Unit 4:

Week of 11/30/2015: Outcomes 1 & 2
 Week of 12/7/2015: Outcomes 3 & 4
 Week of 12/14/2015: Outcomes 5 & 6
 Week of 1/4/2016: Outcome 7
 Week of 1/11/2016: Final Exam

Semester 2:**Tentative Outline of Outcomes/Exams:****Unit 1:**

Week of 1/18/2016: Outcomes 1

Week of 1/25/2016: Outcomes 2 & 3

Week of 2/1/2015: Outcomes 4 & 5

Week of 2/8/2015: Outcomes 6 & Exam

Unit 2:

Week of 2/15/2015: Outcomes 1 & 2

Week of 2/22/2015: Outcomes 3 & 4

Week of 2/29/2016: Outcomes 5 & 6

Week of 3/7/2015: Outcome 7

Week of 3/14/2015: Exam

Unit 3:

Week of 3/21/2015: Outcomes 1 & 2

Week of 3/28/2015: Outcomes 3 & 4

Week of 4/4/2015: Outcomes 5 & 6

Week of 4/11/2015: Outcome 7 & 8

Week of 4/18/2015: Exam

Unit 4:

Week of 4/25/2015: Outcomes 1 & 2

Week of 5/2/2015: Outcomes 3, 4, & 5

Week of 5/9/2015: Outcomes 6 & 7

Week of 5/16/2016: Final Exam